

d.) Remarks.

Claims 1, 22 and 23 have been amended to correct a typographical error: “solid-sate” should read “solid-state,” and the term should be hyphenated for consistency. No new matter has been added or new issues raised. Claims 1-30 are currently pending.

Remarks Regarding 35 U.S.C. § 103(a)

A. Claims 1-15 and 22-28 stand rejected under 35 U.S.C. § 103(a) as allegedly obvious over Schafer (Berichte der Bunsen-Gesellschaft, 1983) in view of van der Weide (SPIE, 1999 or NATO Science Series, II, 2001). This ground of rejection is respectfully traversed, for the following reasons.

As the Examiner outlined on page 2 of the Office Action, the United States Supreme Court in *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966) held that four factual inquiries must be addressed to determine obviousness: (1) Determining the scope and contents of the prior art; (2) ascertaining the differences between the prior art and the claims in issue; (3) resolving the level of ordinary skill in the pertinent art; and (4) evaluating evidence of secondary considerations.

Under this test, the rejections under 35 U.S.C. § 103(a) set forth in the Office Action are *prima facie* deficient because, at the very least, the second step of the test is not satisfied: no correlation is made between the cited references and the language of Applicant’s claims on an element-by-element basis.

In particular, while the Office action recites selected passages from the Schafer and van der Weide references, and concludes that it would have been obvious to modify certain aspects of Schafer in view of the disclosure of van der Weide, the Office action has failed to make any showing that each and every one of the limitations required by the claims would be attained by making the proposed combination.

Moreover, Schafer is redundant because it simply reflects the known prior art extensively discussed by the present application in the “Description of the Background” section of the specification on pages 1-3. Schafer, an article published in 1983, merely describes a submillimeter wave spectrometer employing a tunable oscillator (specification p. 1 line 31; Schafer p. 328 second column) and an InSb detector (specification p. 2 line 7;

Schafer abstract). As the prior art of these parameters was distinguished from the inventive subject matter in the specification, so too can Schafer be distinguished here.

Schafer employs optical calibration (see Schafer's opto-modulator on the bottom of p. 329), which would be disadvantageous to Applicant's invention as explained on pages 2-3 of the specification, and which is not claimed. Furthermore, Schafer discloses displaying signals on an oscilloscope screen (p. 329, second column), whereas, in stark contrast, claim 1 recites "recording frequency markers as a function of time."

Neither does van der Weide make up for the deficiencies of Schafer. Van der Weide discloses a Dual Source Interferometer (DSI), and does not introduce into a sample cell a submillimeter wave generated by a solid-state oscillator as recited in the claims. Thus, van der Weide's technology is exceedingly unrelated to the methods and devices of the claimed invention. Van der Weide employs two waves, neither of which is introduced into a sample cell, and uses the beat frequency difference between the two waves to produce data. This methodology teaches against the claimed invention's generating of a (single) submillimeter wave from an energized solid state oscillator, introducing the wave into a sample cell, electrically generating frequency markers sequentially during a sweep, and recording the frequency markers as a function of time. See claims 1 and 22-24.

Furthermore, van der Weide is directed to reflection spectroscopy in its use of a "more conventional coherent source/detector arrangement" (in other words, when it is not measuring beat frequency between two generated waves from two sources). Therefore reference to this feature of van der Weide on page 3 of the Office Action is irrelevant because the claimed invention is directed to absorption spectroscopy in using a submillimeter wave to measure absorption of a fluid, and records frequency markers as a function of time. Claims 1 and 22. Therefore, van der Weide does not disclose at least the frequency marker generating and recording as a function of time of the claimed invention, and it neither discloses nor suggests the claimed invention because van der Weide is directed to either dual-source interferometer methods or reflection spectroscopy.

The Supreme Court in *KSR Int'l v. Teleflex, Inc.*, 550 U.S. ____ (2007) stated that "[o]ften, it will be necessary ... to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine [independently] known elements

in the fashion claimed by the patent at issue.” Slip op. at 14. An inquiry into whether there was “a teaching, suggestion, or motivation to combine known elements” serves to uphold the well-settled principle that an invention “composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” Id.

Applicant respectfully submits that the Office Action has failed to even demonstrate “that each of its elements was, independently, known in the prior art.” Id. Not only do the Dual Source Interferometer and reflection spectroscopy disclosures of van der Weide provide no motivation to combine van der Weide with Schafer, these references, taken independently or in combination, simply do not contain the elements of the claimed invention. Nor has the Examiner been able to point to any passage or passages reciting or suggesting the elements of the claims. For example, nowhere is the electrical generation of frequency markers with a solid-state oscillator disclosed. Nowhere is the recollection of frequency markers as a function of time disclosed. Nowhere is the conversion of recorded outputs of a solid state detector disposed in a sample cell and detecting absorption of fluid into a function of frequency using the recorded frequency markers disclosed. Simply put, the elements of the claimed invention are not present in or peppered throughout the cited reference in any configuration. Consequently, the rejection is inappropriate because no conceivable combination of van der Weide and Schafer could give miraculous rise to elements which were never present to begin with.

For at least all of these reasons, Applicant respectfully requests that this rejection be withdrawn.

B. Claims 16-19 and 29-30 stand rejected under 35 U.S.C. § 103(a) as allegedly obvious over Schafer in view of van der Weide as applied to claims 1-15 and 22-28, and further in view of Stumpf (US 4,998,433). Applicant also respectfully traverses this ground of rejection.

The arguments made above against Schafer and van der Weide are hereby incorporated and render this rejection invalid. To reiterate in part, the independent elements of the claimed invention are not present independently or in combination in these references, nor does any motivation to combine exist because of van der Weide’s being directed to dual-

source and reflection spectroscopy, thus teaching against the field of Applicant's invention. Moreover, the rejection is *prima facie* deficient because no correlation is made between the cited references and the language of Applicant's claims on an element by element basis.

Additionally, Stumpf is directed to chromatography, not spectrometry as is the claimed invention. Stumpf nowhere discloses submillimeter absorption or evaporation of a chemical species, as does claim 15. Therefore, Stumpf suffers from the shortcomings of Schafer and van der Weide in that it does not provide the missing elements that the Examiner alleges it does. Therefore, no combination would afford it the ability to provide pieces that build the claimed invention.

Furthermore, an inquiry into whether there was "a teaching, suggestion, or motivation to combine known elements" serves to uphold the well-settled principle that an invention "composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." KSR Slip op. at 14. Applicant respectfully submits that the Examiner has attempted to prove the present invention obvious "merely by demonstrating that each of its elements was, independently, known in the prior art." Id.

The Examiner has relied on impermissible hindsight in an attempt to demonstrate an "apparent reason to combine known elements in the fashion claimed." Id. Relying on the disclosure provided by an applicant of exceptional skill in order to contrive an "apparent reason to combine known elements in the fashion claimed"(Id.) is impermissible because "[t]he question is not whether the combination was obvious to the patentee but whether the combination was obvious to a person with ordinary skill in the art." Id. at 16. The level of ordinary skill in the pertinent art would not lead one to look to a reference directed to chromatography and employing glass beads as condensing surfaces (Stumpf) as a source to solve the problems that the present invention addresses. Moreover, its combination with equally deficient references does cannot achieve the claimed submillimeter spectrometric method comprising introducing a fluid containing a chemical species into a trap, cooling the trap so that the chemical species is in a condensed state, evacuating fluid that is not condensed; evaporating the chemical species; leading the evaporated chemical species into a sample cell, and measuring absorption of the chemical species.

For at least these reasons, Applicant requests that this rejection be withdrawn.

C. Claims 20-21 stand rejected under 35 U.S.C. § 103(a) as allegedly obvious over Schafer in view of van der Weide as applied to claims 1-15 and 22-28, and further in view of Cocatre-Zilgien (US 6,012,675). Applicant also respectfully traverses this ground of rejection.

The arguments made above against Schafer and van der Weide are hereby incorporated and render this rejection invalid. To reiterate in part, the independent elements of the claimed invention are not present independently or in combination in these references, nor does any motivation to combine exist because of van der Weide's being directed to dual-source and reflection spectroscopy, thus teaching against the field of Applicant's invention. Moreover, the rejection is *prima facie* deficient because no correlation is made between the cited references and the language of Applicant's claims on an element by element basis.

Additionally, Cocatre-Zilgien is directed to spectrometric hygrometers, and not to a method for surveying an area for a chemical species, as are claims 20-21. Because Cocatre-Zilgien does not disclose or suggest identifying chemical species and recording absorption spectrums at multiple locations indicated by GPS coordinates, Cocatre-Zilgien does not and can not provide the missing elements that the Examiner alleges it does. Therefore, no combination would afford it the ability to provide pieces that build the claimed invention.

Furthermore, an inquiry into whether there was "a teaching, suggestion, or motivation to combine known elements" serves to uphold the well-settled principle that an invention "composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." KSR Slip op. at 14. Applicant respectfully submits that the Examiner has attempted to prove the present invention obvious "merely by demonstrating that each of its elements was, independently, known in the prior art." Id.

The Examiner has relied on impermissible hindsight in an attempt to demonstrate an "apparent reason to combine known elements in the fashion claimed." Id. Relying on the disclosure provided by an applicant of exceptional skill in order to contrive an "apparent reason to combine known elements in the fashion claimed" (Id.) is impermissible because "[t]he question is not whether the combination was obvious to the patentee but whether the combination was obvious to a person with ordinary skill in the art." Id. at 16. The level of ordinary skill in the pertinent art would not lead one to look to a reference directed to

hygrometry with a cursory mention of GPS within a flight management system in line 57 of column 15 as a source to solve the problems that the present invention addresses. Moreover, its combination with equally deficient references cannot achieve the claimed submillimeter spectrometry utilized for chemical survey at various GPS coordinates.

For at least these reasons, Applicant requests that this rejection be withdrawn.

Conclusion

In view of the foregoing amendments and/or remarks, favorable reconsideration of the application and issuance of a Notice of Allowance is respectfully requested.

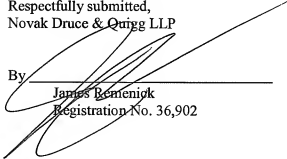
If there are any issues remaining which the Examiner believes could be resolved through either a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the number below.

Applicant submits herewith via credit card the fee in the amount of \$225.00 to cover two months' extension of time for a small entity. The Commissioner is hereby authorized to charge Deposit Account No. 14-1437 for any additional fees deemed necessary, referencing Attorney Docket No. 8107.002.US; and Applicant hereby petitions for any needed extension of time not otherwise accounted for with this submission.

Respectfully submitted,
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By


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